Landsat 7 Processing System CDR

• Introduction	J. Henegar
• Design Overview	R. Schweiss T. Aslam
• LPS Hardware Architecture	C. Brambora
• LPS Operational Scenarios	R. Schweiss
• SWCI Detailed Design	J. Hosler D. Crehan
• System Testing	J. Henegar
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• Facilities	EDC
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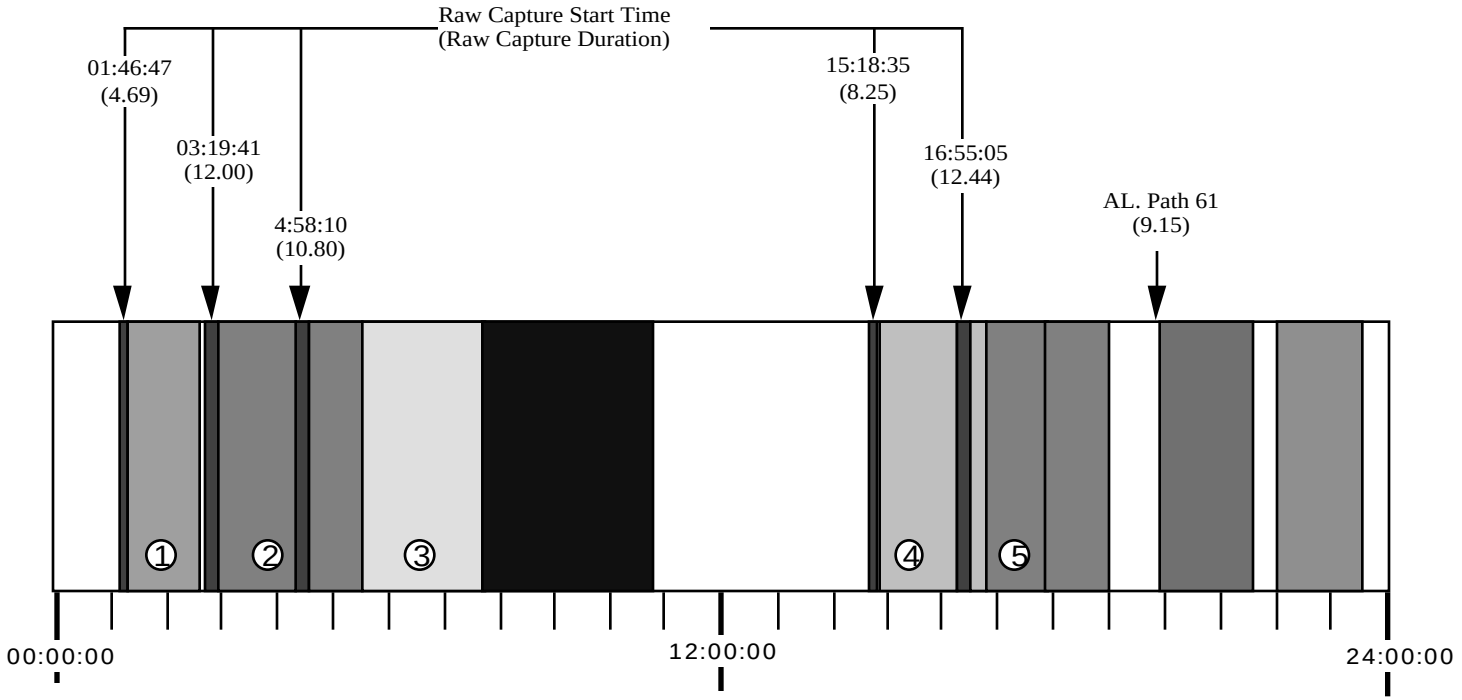
Operational Scenarios (cont.)

LPS Operational Cycle - 24 Hours (Day 1 of 3 Degree Acquisition Circle w/ One Alaska Contact)



Start Up LPS String

LPS Operator

—Power on/boot operations interface workstation and LPS string

—Log onto operations interface workstation and Logs onto LPS string console

—Start up ORACLE DBMS on LPS string (if not part of system boot)

—Telnet/rlogin from operations interface workstation to LPS string

—Start LPS user interface

MACS

—Make database tables consistent. and Displays LPS main menu

—Schedule automatic capture for next scheduled contact and Start DDN receiver process

LPS Operator—Select modify/configuration menu options

MACS—Display configuration form

LPS Operator—Verify LPS string configuration (hardware string ID, LGS channel ID, spacecraft ID, instrument ID)

LPS Operator (Optional)—Update LPS string configuration

MACS (Optional)—Validate and store updated configuration in LPS database

LPS Operator (Optional)—Select files/enable disable transfer menu options

MACS (Optional)—Display LPS file transfer enable/disable form

LPS Operator (Optional)—Enable file transfer to LP DAAC, if required

MACS—Update file transfer enable flag in LPS database

LPS Operator

—Execute LPS functions test and product verification(Optional)

—Select monitor/monitor operations menu options to display LPS alarms and alerts

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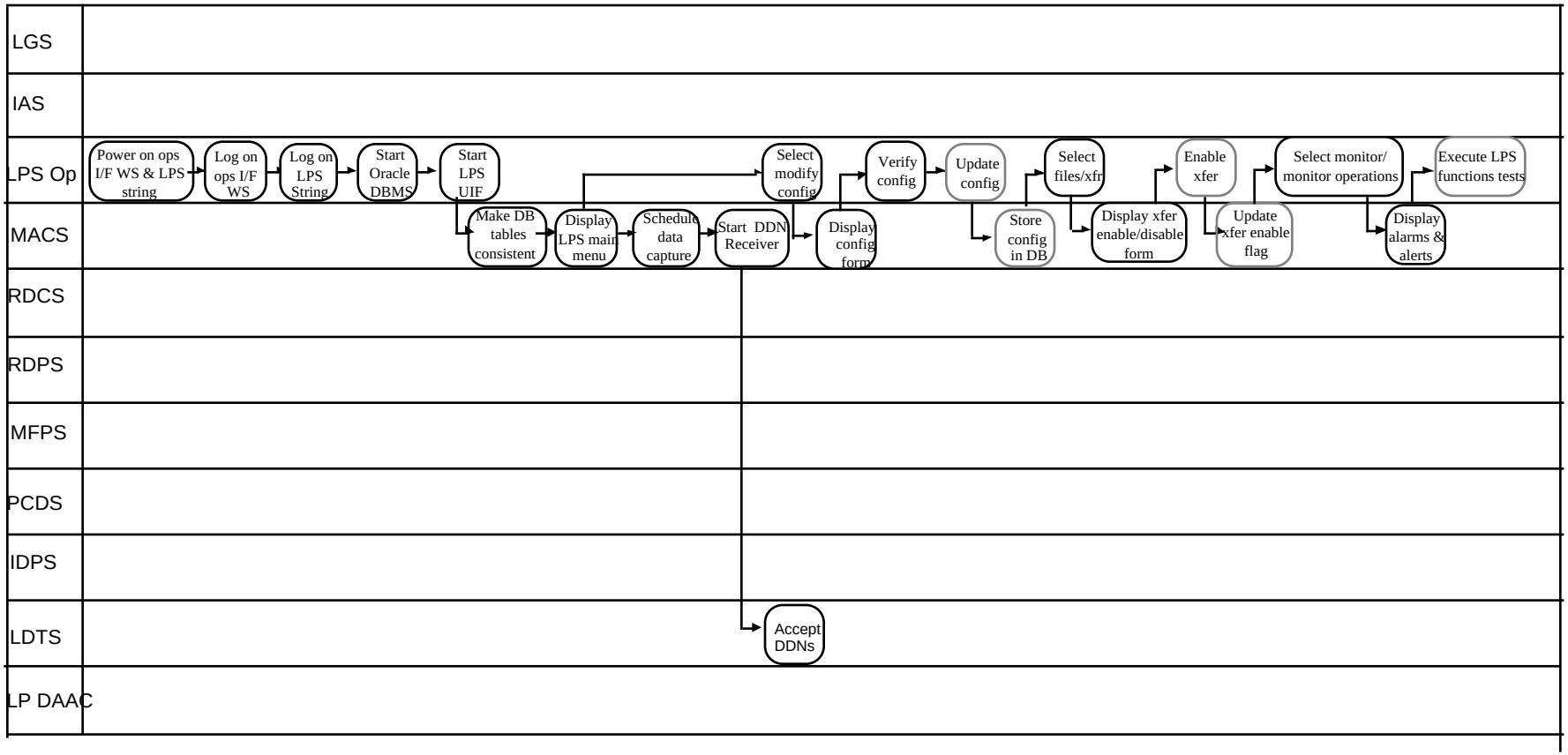

Start Up LPS String

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Receive Contact Schedule From the LGS

LGS—Send contact schedule to LPS operator.

LPS Operator

—Receive contact schedule.

—Select setup/modify schedule menu options.

MACS—Display schedule modification form.

LPS Operator—Updates scheduled contact entries for contacts already in LPS database but modified for new schedule. Enter new contact entries for contacts not in LPS database.

MACS—Validate and store modified contact schedule entries in LPS database.

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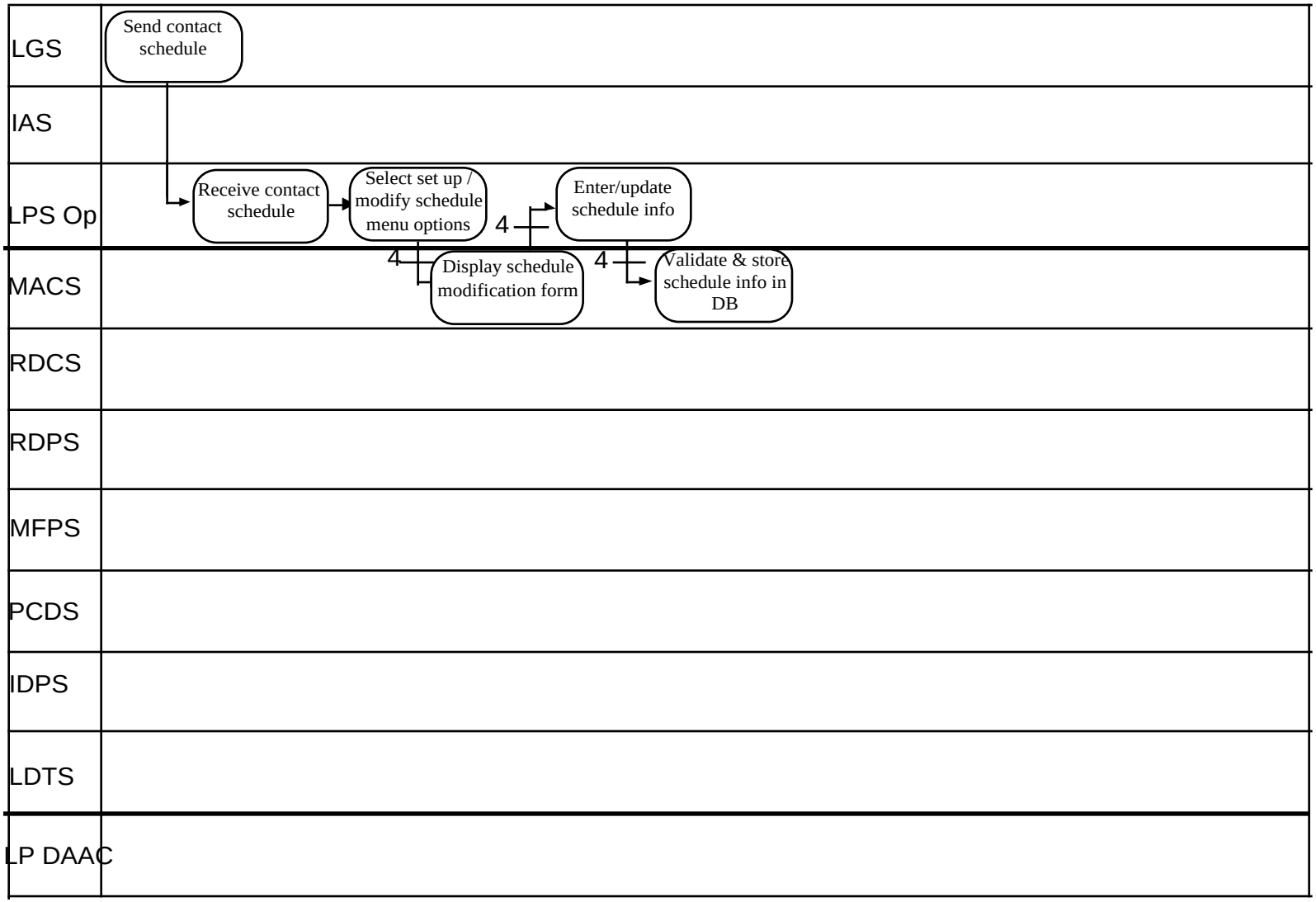

Receive Contact Schedule from the LGS

Set Up LPS Strings for Data Capture

LGS (Optional)—Switch LGS channels to new configuration.

LPS Operator

—Review LGS contact schedule for new configuration.

— If LGS channel reconfiguration is required, select set up/configuration menu options(Optional)

MACS (Optional)—Display configuration form.

LPS Operator (Optional)—Update LGS channel for new configuration.

MACS (Optional)—Validate and store updated LGS channel in LPS database.

LPS Operator

—Check available disk space for system data stores using IRIX utilities and clean up as necessary.

—Check available disk space on capture disk using IRIX utilities. It is an operational decision whether existing files will be deleted or data will not be captured when insufficient disk space is available.

—Execute LPS functions test for LPS functions and product verification.

Note: a method for concurrently updating all four strings is TBD

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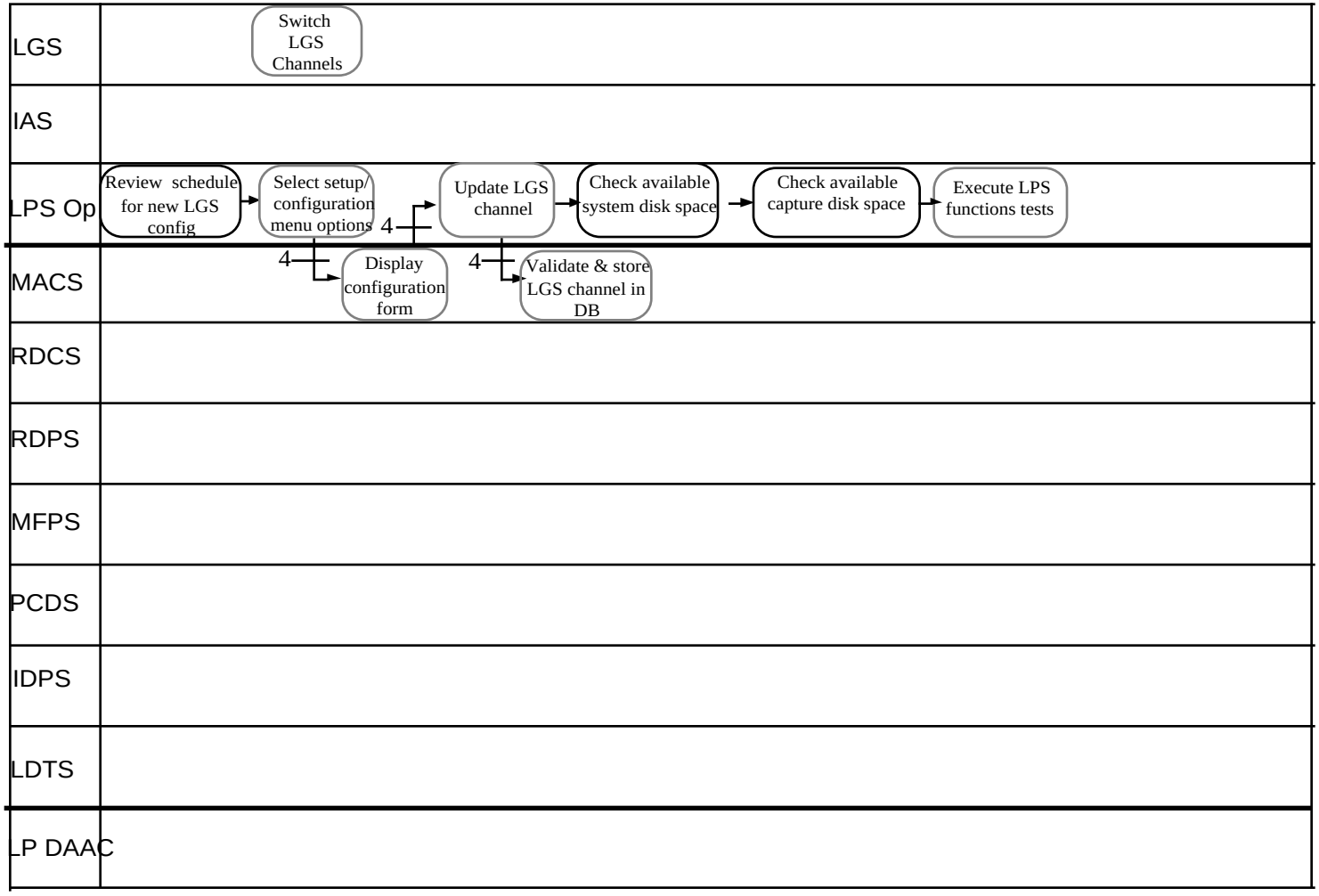

Set Up LPS Strings for Data Capture

Execute LPS Functions Test and Product Verification

LPS Operator—Select files/disable transfer menu options to disable automatic DAN transmission to LP DAAC on string to be tested

MACS—Set file transfer flag in LPS database to “disabled"

LPS Operator—On the string to be tested, issue command to process disk-resident test data to Level 0R

RDPS, MFPS, PCDS, IDPS—Process data to Level 0R

LPS Operator—Verify correct operation by examining moving window display, output files, and LPS Q/A report

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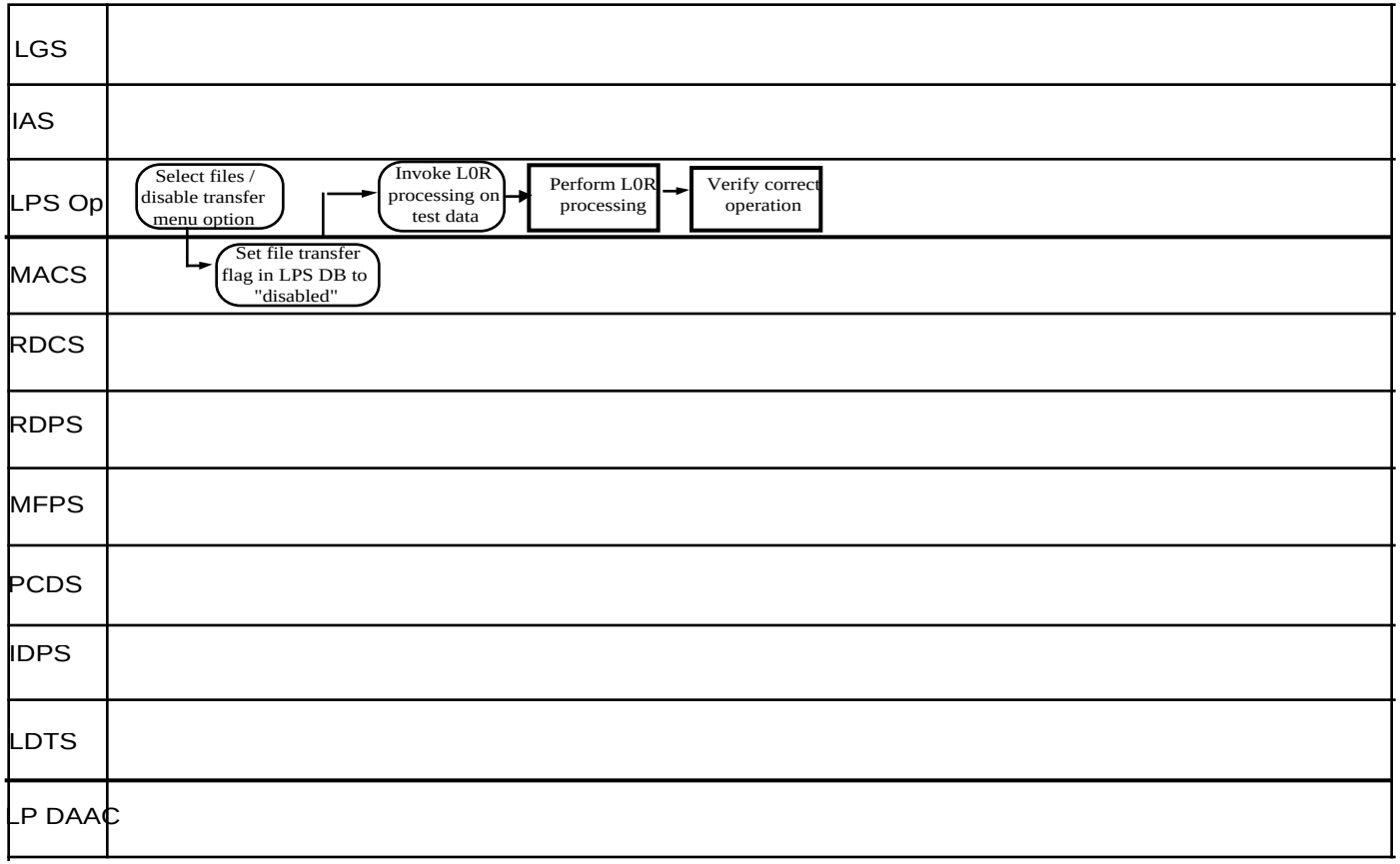

Execute LPS Functions Test and Product Verification

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Receive Parameters from the IAS

IAS—FTP new parameters file to LPS test string

LPS Operator—Select "Ingest IAS Parms" from the SETUP drop down menu list.

MACS—Display a default ingest IAS file name.

LPS Operator—Update file name as appropriate and press "OK".

MACS—Validate and store new parameters in LPS database

LPS Operator—Test for one week with actual LPS data.

LPS Operator—After successful testing promote parameters to the operational strings.

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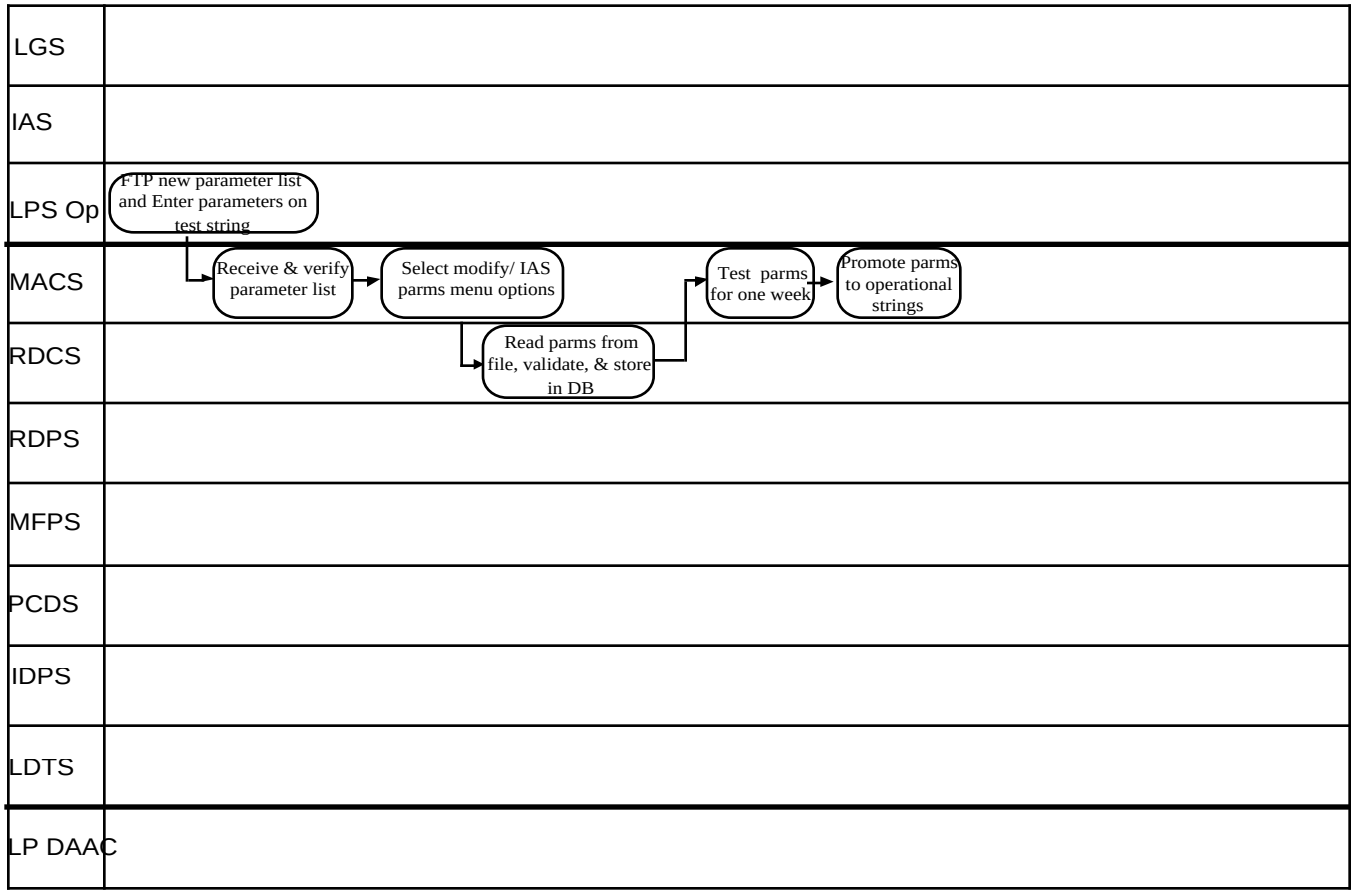

Receive Parameters from the IAS

Adjust LPS Level 0R Parameters

LPS Operator

—Determine desired parameter values.

—Select setup/RDP parameters menu options on LPS test string.

MACS—Display RDP parameters form.

LPS Operator—Update RDP parameters.

MACS—Validate and store RDP parameters in LPS database.

LPS Operator—Select MFP parameters option on LPS test string.

MACS—Display MFP parameters form.

LPS Operator—Update MFP parameters.

MACS—Validate and store MFP parameters in LPS database

LPS Operator—Select IDP parameters option on LPS test string.

MACS—Display IDP parameters form.

LPS Operator—Update IDP parameters

MACS—Validate and store IDP parameters in LPS database.

LPS Operator—Execute LPS functions test and product verification (see Execute LPS Fun. Test & Prod. Verif.) to verify proper processing and Promotes parameters to each operational string.

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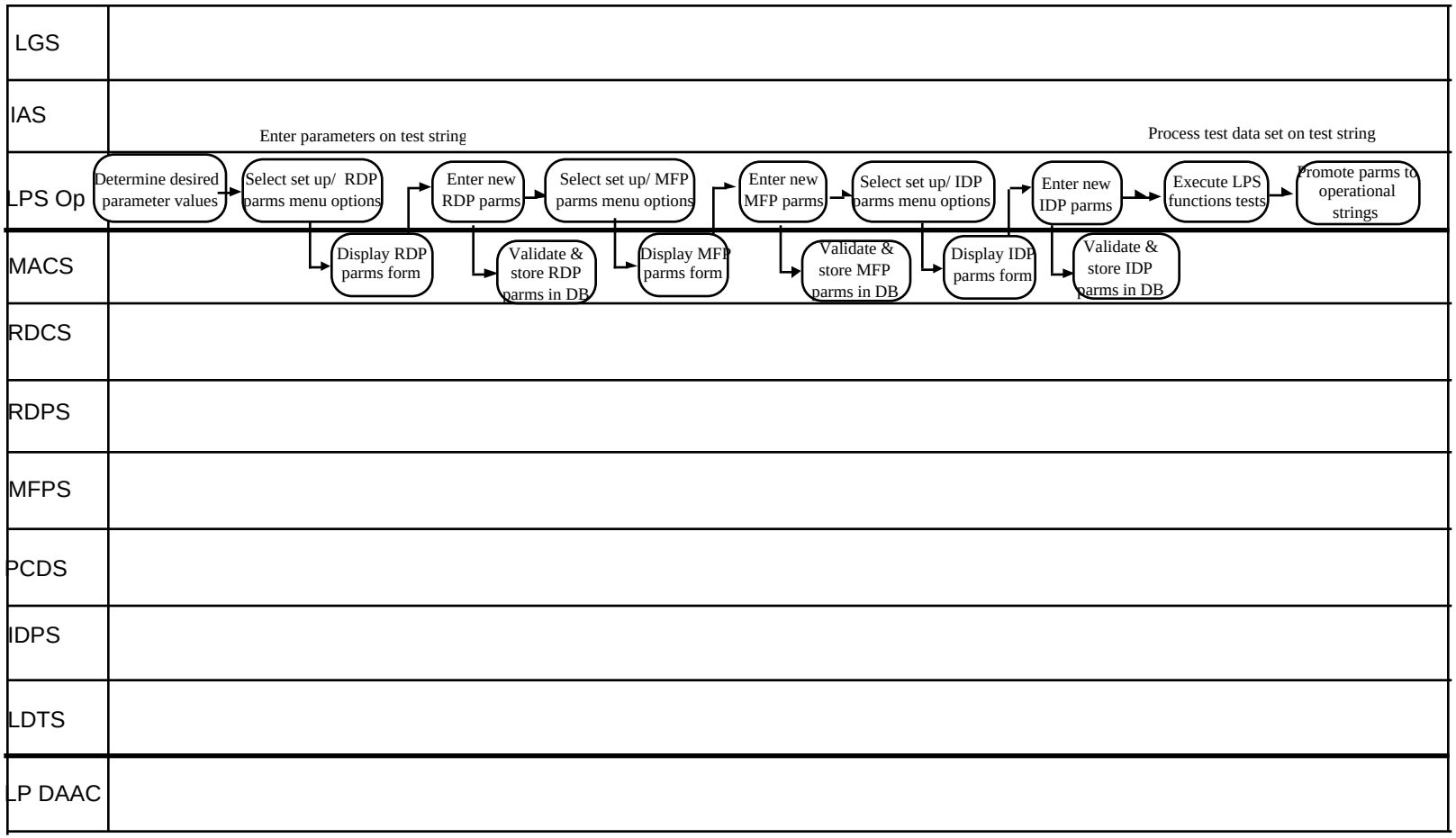

Adjust LPS Level 0R Parameters

Adjust LPS Level OR Thresholds

LPS Operator

—Determine desired threshold values.

—Select set up/ modify thresholds menu options.

MACS—Display thresholds form.

LPS Operator—Update thresholds.

MACS—Validate and store updated thresholds in LPS database.

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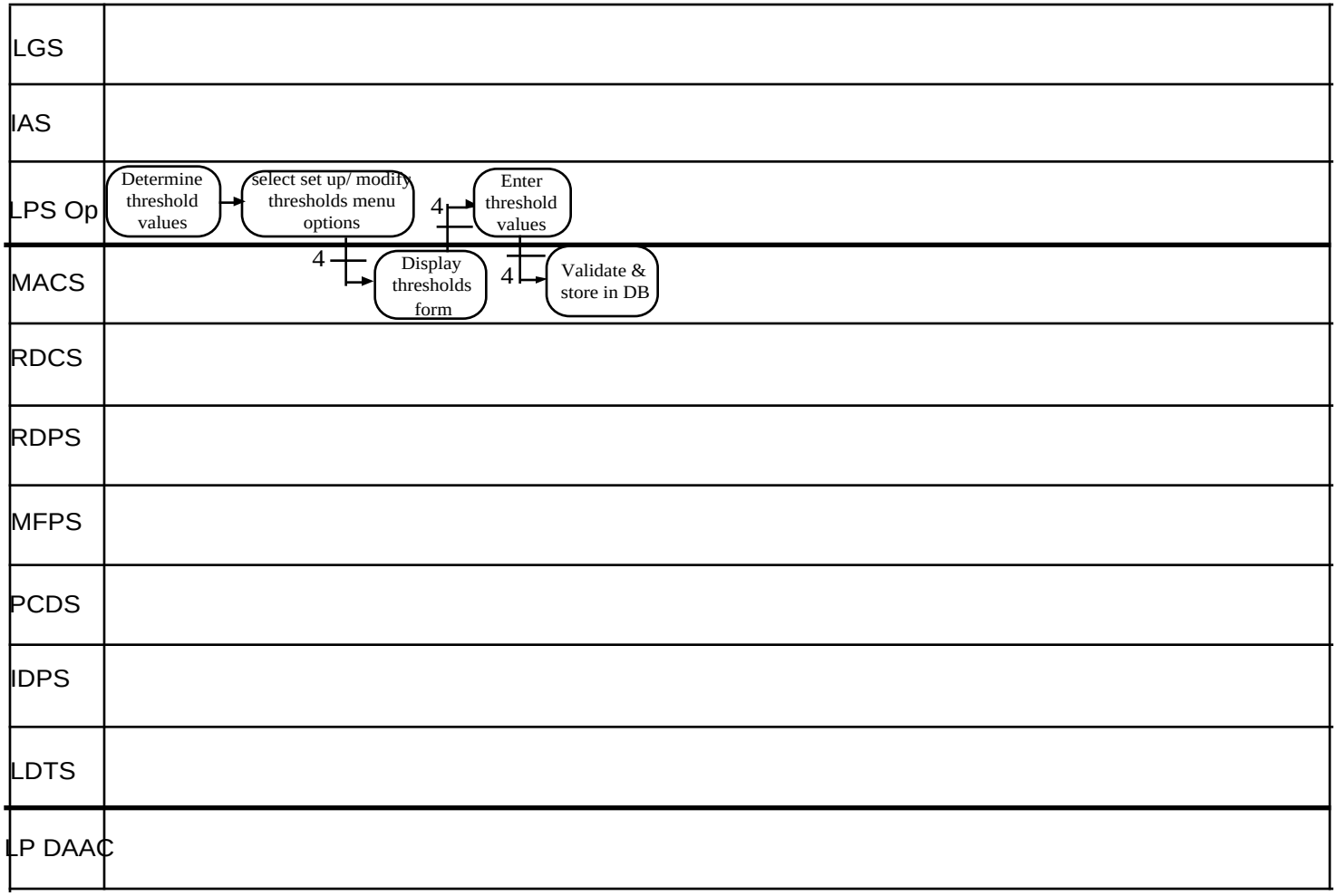

Ajust LPS Level 0R Thresholds

Receive Data from the LGS (Automatic)

MACS

—Retrieve next contact from contact schedule and schedule data capture start.

—An operator-setable parameter number of seconds prior to scheduled data start time, invoke RDCS with a scheduled stop time.

—Begin data capture.

—Every 5 seconds, log the number of 10-MB buffers that have been received.

MACS—Display periodic captured data volume reports.

LPS Operator—Monitor data capture.

RDCS—At the scheduled stop time, cease data capture and Insert data receive summary record into LPS database.

LPS Operator—Select reports/data receive summary menu options, specify this contact, and select display or print options.

MACS—Invoke data receive summary report generator.

RDCS—Generate data receive summary.

MACS—Display/print data receive summary.

LPS Operator

—Provide MOC with data receive summary via voice link or FAX.

—Mount tape and selects control/start copy menu options, specifying tape drive and contact period.

MACS—Send start copy command.

RDCS—Copy specified contact period to tape and print label.

LPS Operator—Apply label and move tape to 30-day storage.

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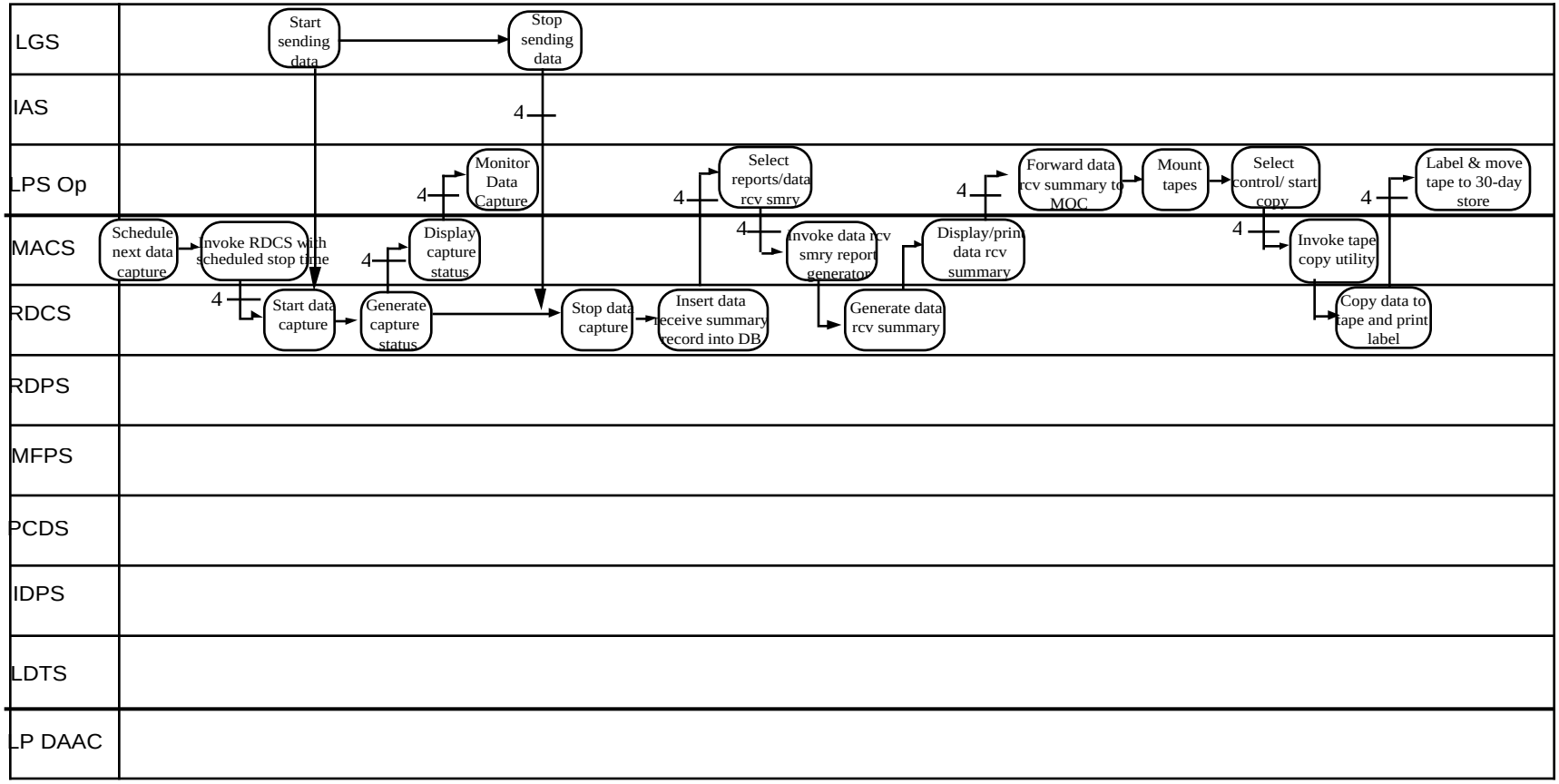

Receive Data from the LGS (Automatic)

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Process Data to Level 0R

LPS Operator

—Verify that sufficient disk space is available in the data transfer store for output products using IRIX system commands

—Select control/start processing menu options, selecting contact period to be processed

MACS—Invoke Level 0R processing programs

RDPS—Process specified contact period

MFPS—Process specified contact period

PCDS—Process specified contact period

IDPS—Process specified contact period

LP Operator(Optional)—For each string, select Moving Window Display option, data format (format 1 or format 2), bands to be viewed, and display device

MACS

—Validate MWD parameters and store in database

—Initialize window

IDPS—Generate and Load MWD image data on a continual basis

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Process Data to Level 0R (cont.)

LP Operator

—Periodically examine image data for obvious problems.

—If image data is inferior, inform shift manager(TBD).

MACS

—Generate metadata for processed contact period.

—Invoke LDTS to send DAN for this contact period.

LDTS—Open connection to LP DAAC and send DAN to LP DAAC.

LP DAAC—Receive DAN and respond with DAA.

LDTS

—Log to LPS journal that DAN was sent and acknowledged.

—Terminate connection.

MACS—Display "DAN sent" message (assumes operator has LPS monitor operating).

LPS Operator

—Verify DAN was acknowledged by LP DAAC.

—Select LPS QA report, specifying this contact period, and display/print option. (Optional)

MACS (Optional)—Invoke report generator and print report.

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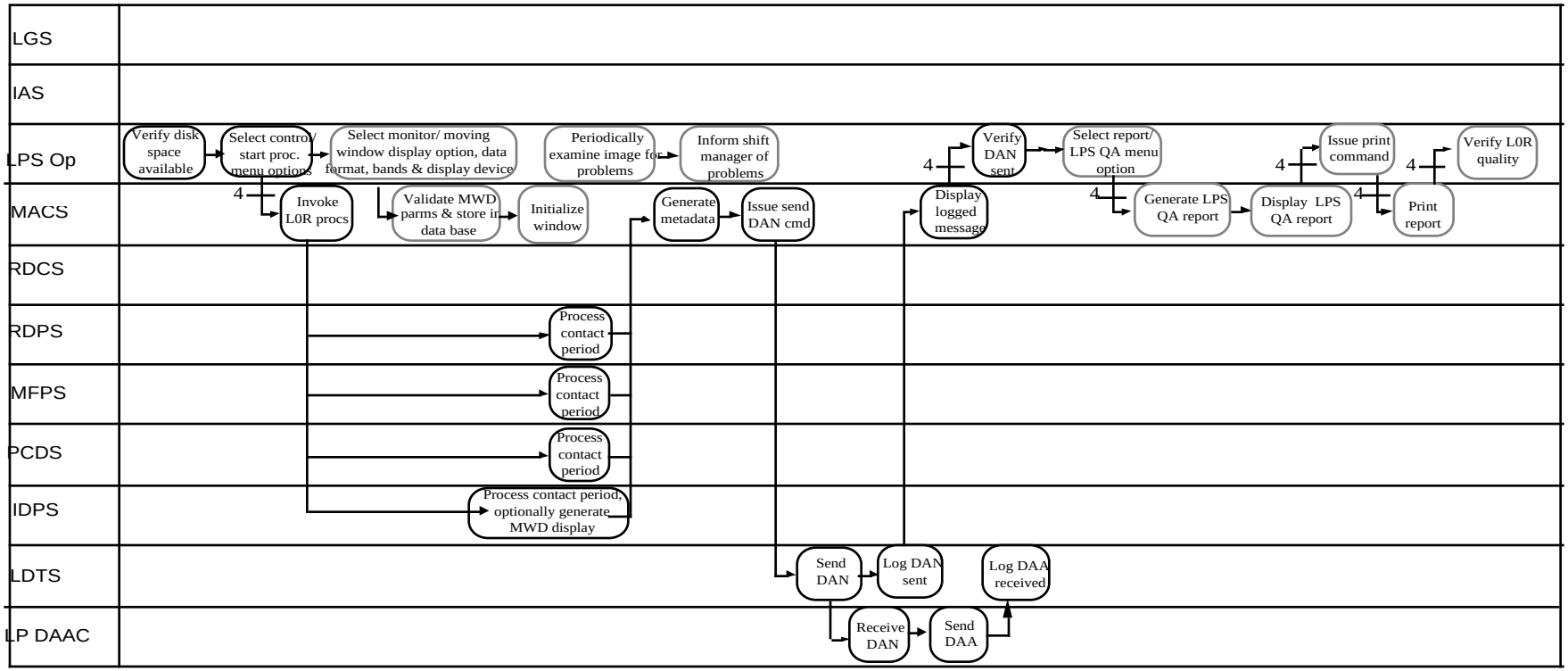

Process Data to Level 0R

Transfer Files to the LP DAAC

LP DAAC—Open an ftp connection to LPS string containing the desired file(s).

LDTS—Authenticate and accept connection (it is assumed that this step is performed by the IRIX ftp daemon or a similar system program).

LP DAAC—Request transfer of desired file(s).

LDTS—Transmit desired file(s) to host (it is assumed that this step is performed by the IRIX ftp daemon or a similar system program).

LP DAAC

—Terminate ftp connection.

—Open a TCP connection to the LPS string from which files were obtained.

—Send the DDN.

LDTS—Respond with DDA.

LP DAAC—Terminate TCP connection.

LDTS

—Delete files successfully transferred.

—Update file transfer records in database.

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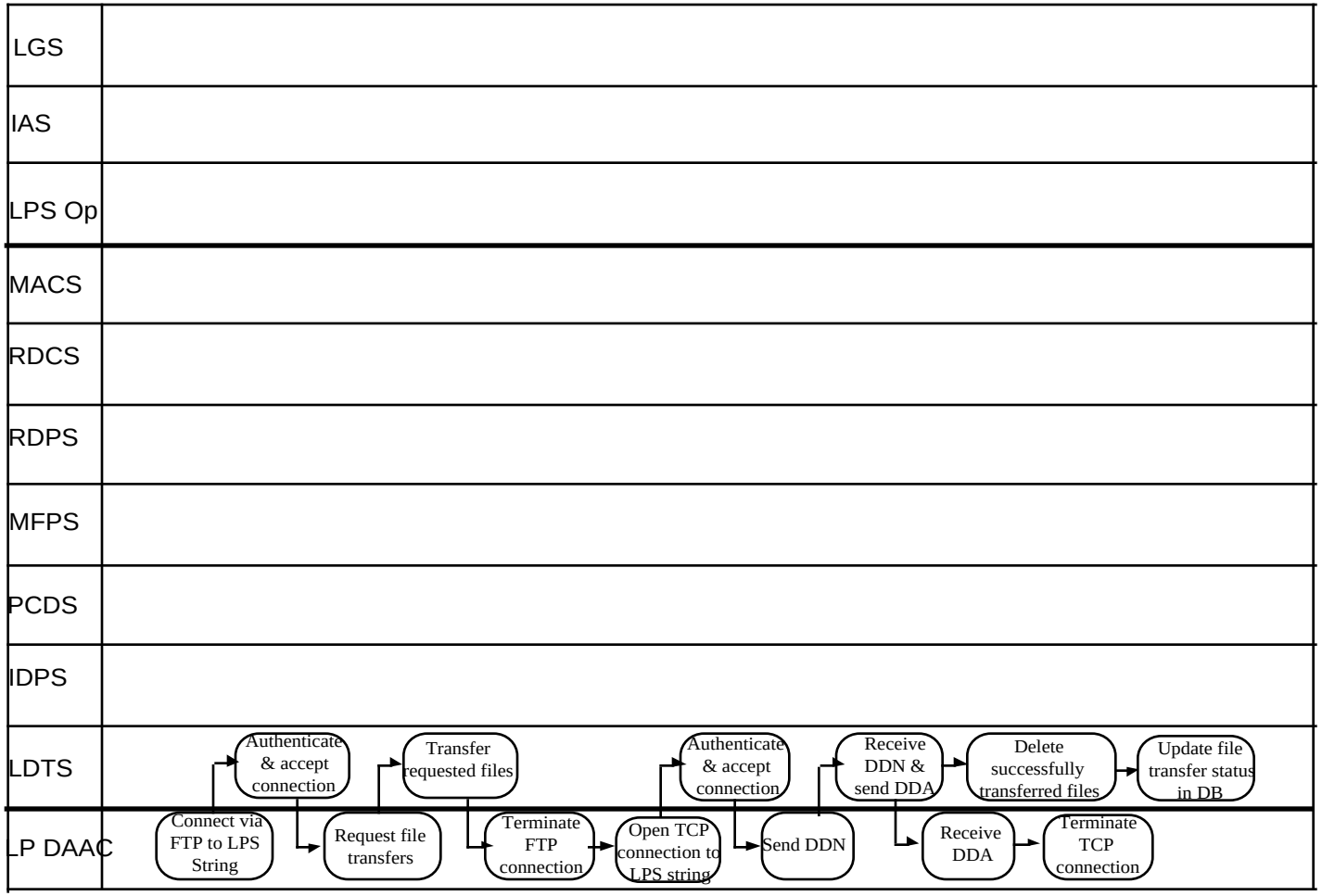

Transfer Files to the LP DAAC

Monitor LPS-LP DAAC File Transfers

LPS Operator—Monitor interface with LP DAAC via LPS log and IRIX system utilities and Select report/file transfer summary menu options, specifying time period of interest and display/print option.

MACS—Invoke file transfer summary report generator.

LDTS—Generate file transfer summary report for specified time period.

MACS—Display/print file transfer summary report.

LPS Operator—Examine report.

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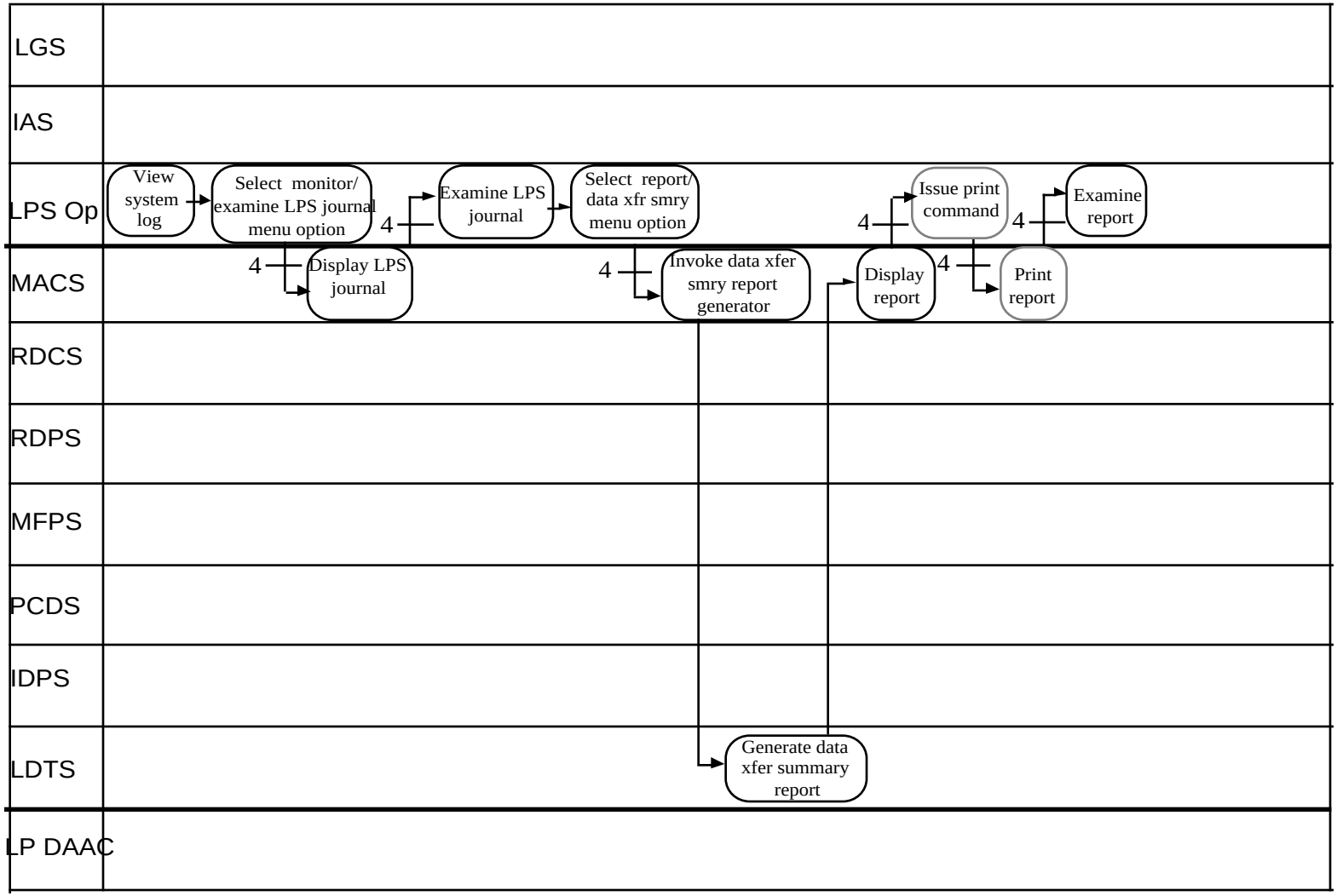

Monitor LPS-LP DAAC File Transfers

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Restage Data for Reprocessing

IAS—Issue reprocessing request, specifying contact period to be reprocessed.

LPS Operator

—Receive reprocessing request

—Locate specified contact period in 30-day store

—If contact period is not available, send notification to IAS

—Schedule restage outside of contact schedule

—Mount tapes

—Select control/restage menu options, specifying tape drive and reprocessing version number.

—If necessary, restore calibration parameters for the contact period from disk.

MACS—Issue restage command to RDCS.

RDCS

—Copy contact information from tape into LPS database

—Copy contact period data file from tape to capture disk

LPS Operator—After Level 0R processing is complete, restore any changed calibration parameters to the current values

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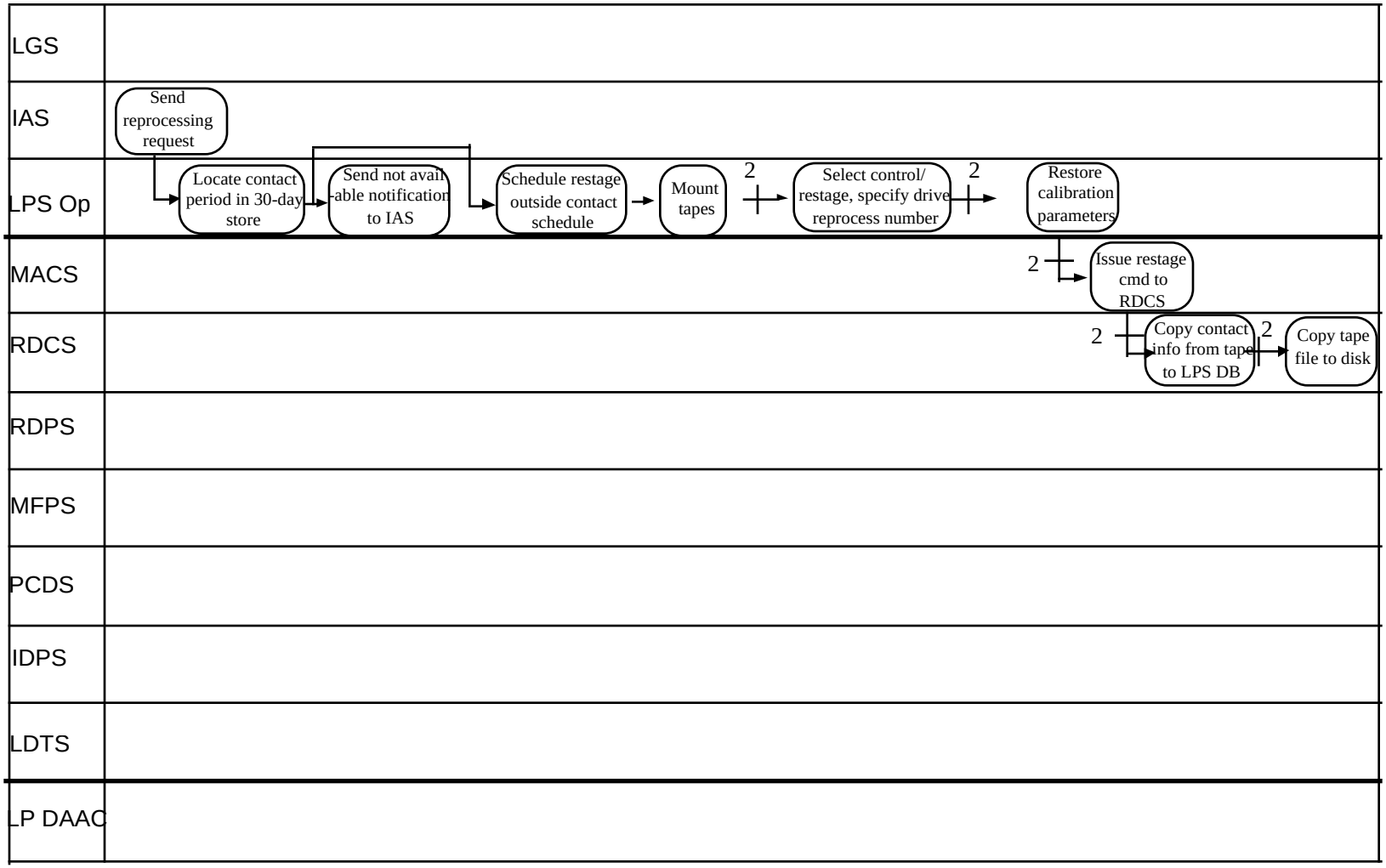

Restage Data for Reprocessing

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Support Operational Training and Test

LPS Operator

—Designate printer for reports.(Optional)

—Select "Reports" from menu.

—Select appropriate report from menu items.

MACS—Generate and display report.

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Receive Data From the LGS (Manual With Database Operating)

LPS Operator—Select control/start capture menu option, specifying capture stop time.

MACS—Invoke RDCS with specified stop time.

RDCS—Begin data capture.

LPS Operator—Monitor data capture.

RDCS

—Stop data capture.

—Insert data receive summary record into LPS database.

LPS Operator: Continue as in automatic capture

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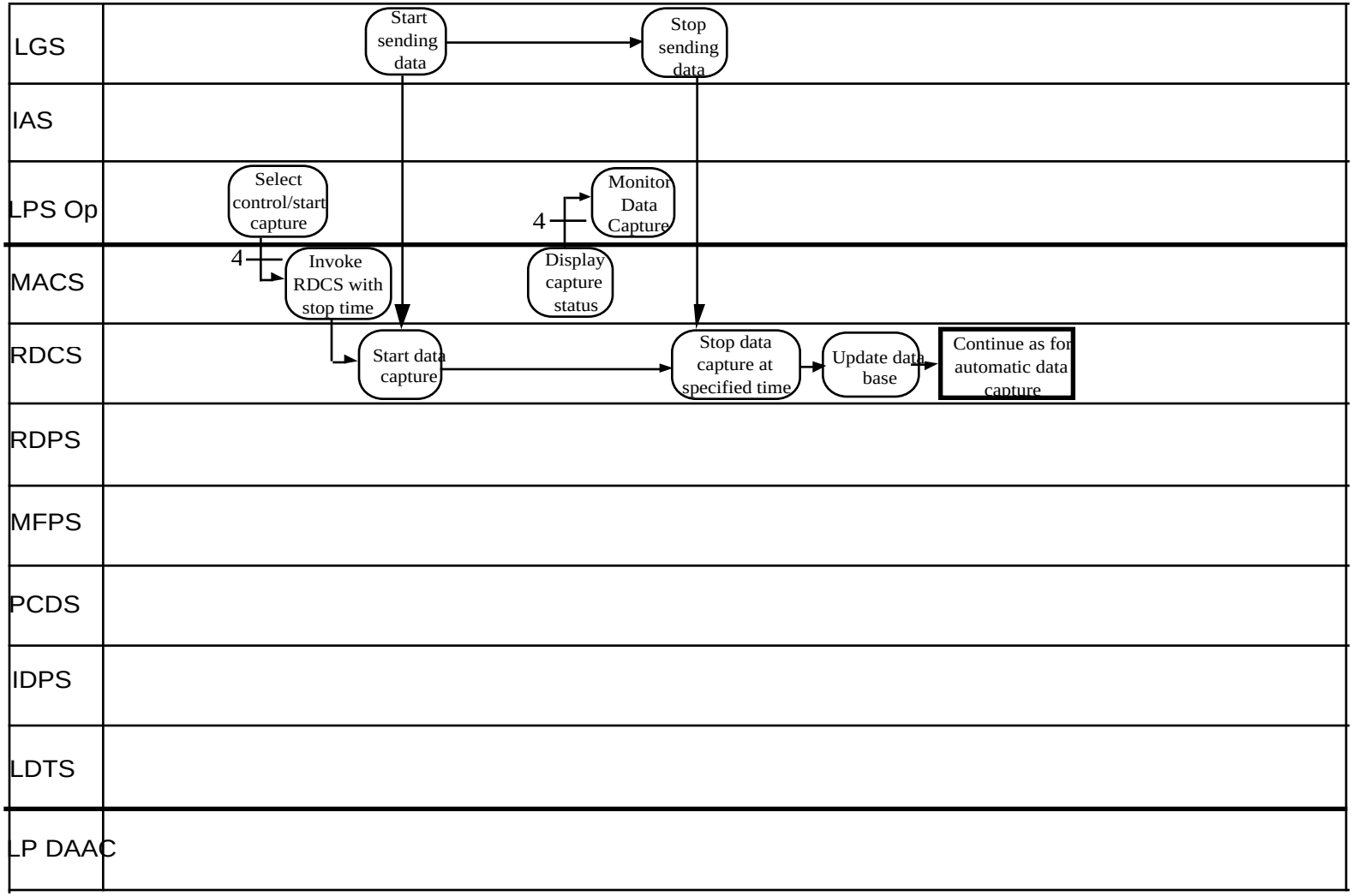

Receive Data from the LGS (Manual with Database)

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Receive Data From the LGS (Manual Without Database)

- LPS Operator
  - —Review contact schedule for data capture time
  - —Start data capture program, specifying data capture stop time
- RDCS—Initialize for data capture
- LGS—Begin sending data
- RDCS—Capture data
- LGS Operator—Monitor data capture
- LGS—Stop sending data
- RDCS—Stop data capture at specified stop time
  - —Write data receive summary information to file
- LPS Operator
  - —Display/print data receive summary information file using IRIX utilities
  - —Forward data receive summary to MOC
  - —Mount tape and invoke copy to tape utility
  - —Label tape and move to 30-day storage

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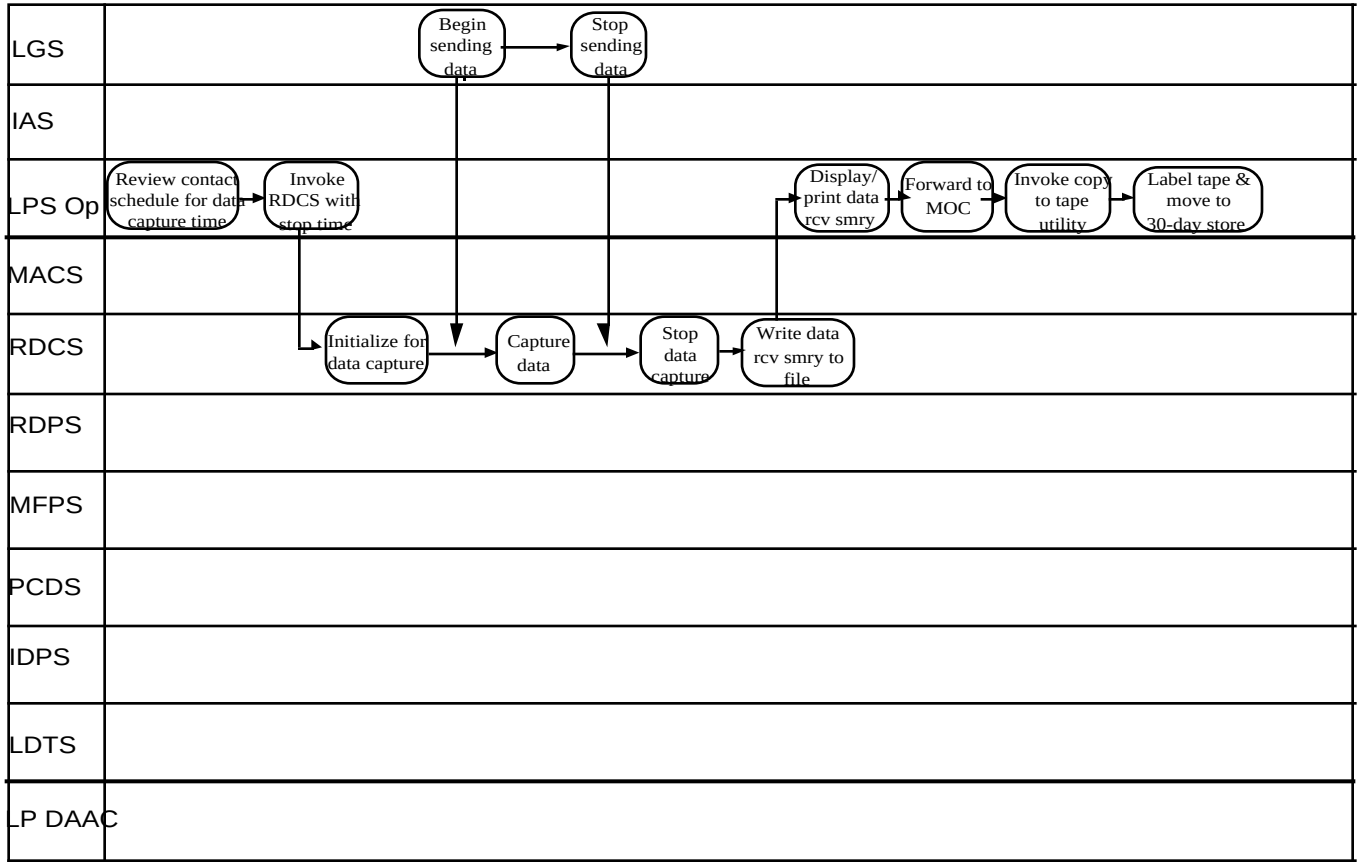

Receive Data from the LGS (Manual without Database)

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Restore Database after Non-Database Capture Operations

LPS Operator—Invoke data receive summary loader program, specifying name of data receive summary file.

RDCS—Load specified data receive summary file into LPS database.

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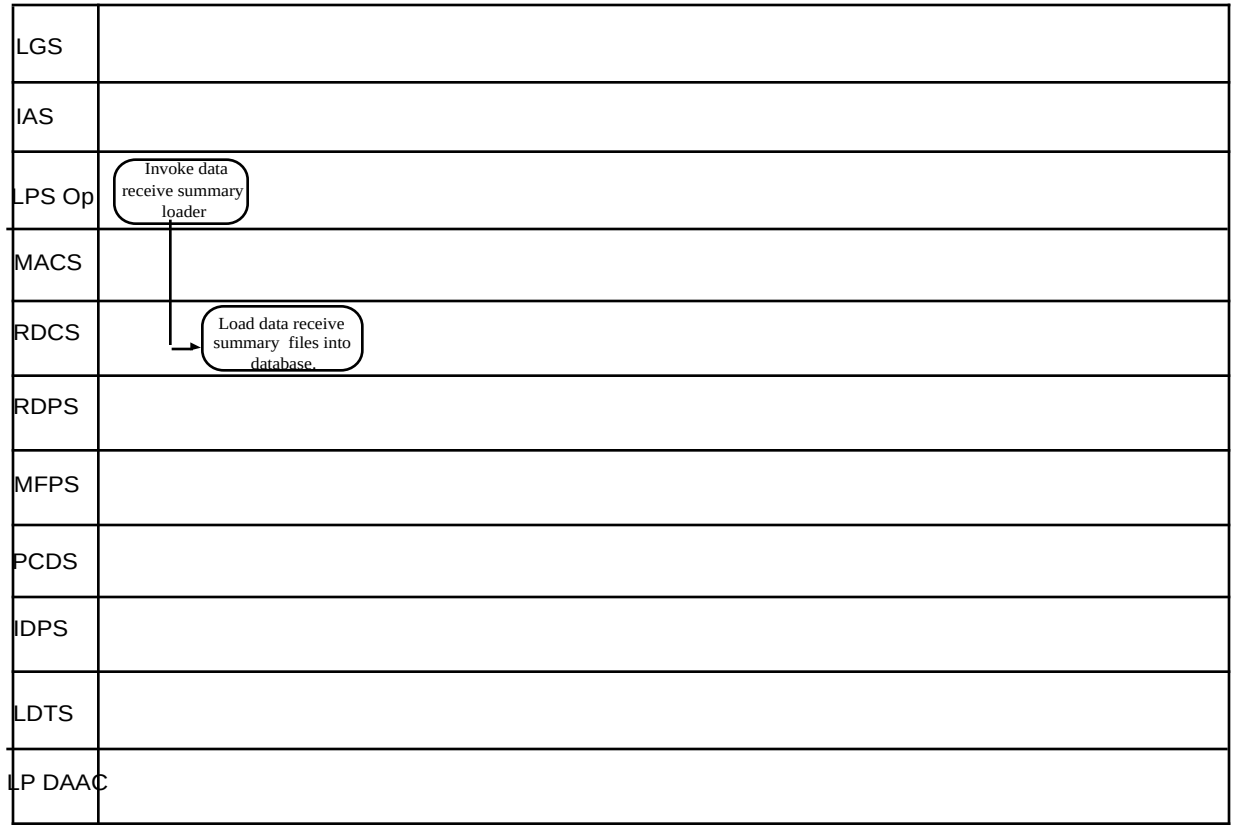

Restore Database After Non-Database Capture

Respond to Failure in LGS/LPS Interface

LPS Operator

—If the LPS operator has detected the failure, notify the LGS operator; otherwise, receive notification from the LGS operator of the failure.

—If the failure occurs during data capture, notify the MOC of the data loss.

LPS and LGS operators

—Resolve problem in interface.

LPS Operator

—Coordinate with the LGS operator to test the interface by capturing a test data set sent from the LGS. (See Sections 3.3.1, 3.4.1, and 3.4.2 for alternative data capture scenarios.)

—Verify the successful transmission of the test data set by direct examination of the file using IRIX utilities, test utilities, and/or through the LPS data receive summary. (See Section 3.3.1 for the steps to generate the data receive summary.)

—Delete transmitted test files and database entries for test data files.

Respond to Failure in LPS/LP DAAC Interface

LPS Operator

—If the LPS operator has detected the failure, notify the LP DAAC operator; otherwise, receive notification from the LP DAAC operator of the failure.

—Do not perform additional Level 0R processing.

—Continue to capture data and to copy the captured data to the 30-day store. Ensure sufficient disk capacity by deleting on-line capture data sets copied to the 30-day store.

LP DAAC—Notify LPS operator that interface is restored.

LPS Operator

—Resume Level 0R processing, restaging data from the 30-day store as necessary. (See Restage Data...) The outstanding DANs at the time the interface failed should not have to be resent unless DAAs were not received from LP DAAC. Outstanding DDNs from LP DAAC would only have to be resent if DDAs were not received from LPS.

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Respond to Exhaustion of LPS Output Storage Capacity

LPS Operator

—Continue receiving data from the LGS as scheduled

—Do not initiate Level 0R processing on any received data until output storage is available. Coordinate with the LP DAAC operator in regard to the LP DAAC schedule for transferring retained files

Respond to LPS String Failure

LPS Operator

—Coordinate with LGS operator to switch the LGS output channel received by the failed string to the backup string.

—Switch channel to backup string.

—Notify the LP DAAC operator of the failure.

—If necessary, start LPS backup string.

—Ensure string is configured with current software version.

—Set up the string for data capture.

—Select set up/modify schedule menu options, enter contact schedule information for new LGS channel.

LPS Operator, MACS, RDCS—If the string failed after raw data capture and before completion of other processing, mount archived, unprocessed raw data tapes from failed string and copy to backup.

LPS Operator, MACS, RDPS, MFPS, PCDS, IDPS, LDTS—Process restaged and newly captured raw data to Level 0R.

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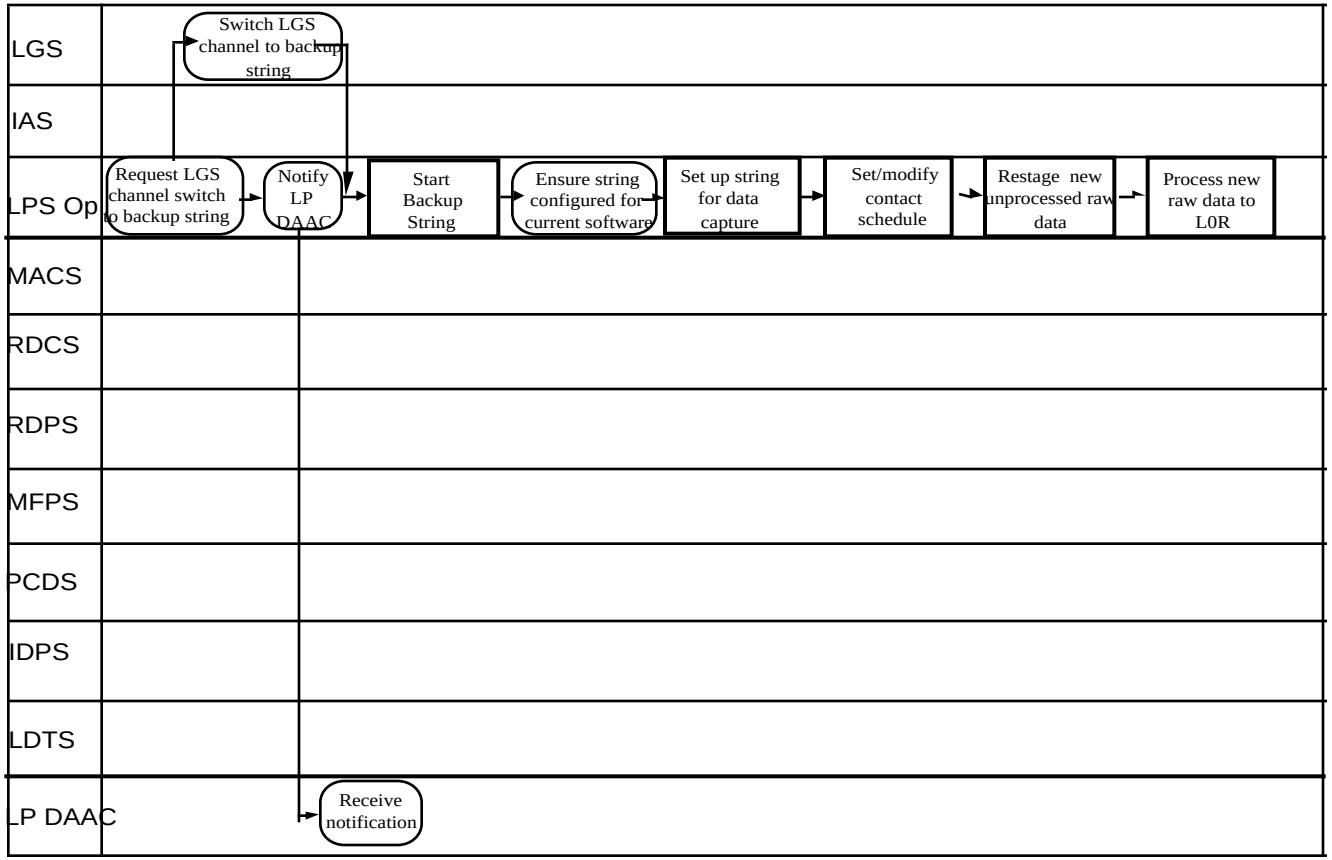

Respond to LPS String Failure

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Restore LPS String

LPS Operator—On backup string, select reports/data transfer summary menu options to invoke data transfer summary report generation.

MACS—Invoke data transfer summary report generator.

LDTS— Generate data transfer summary report.

MACS—Display/print data transfer summary report.

LPS Operator

—If all files on backup string have not been transferred, resend any outstanding DANs.

—Coordinate with LGS operator to switch LGS channel from backup string to restored string.

LGS—Switch LGS channel to restored string.

LPS Operator—Start up restored string.

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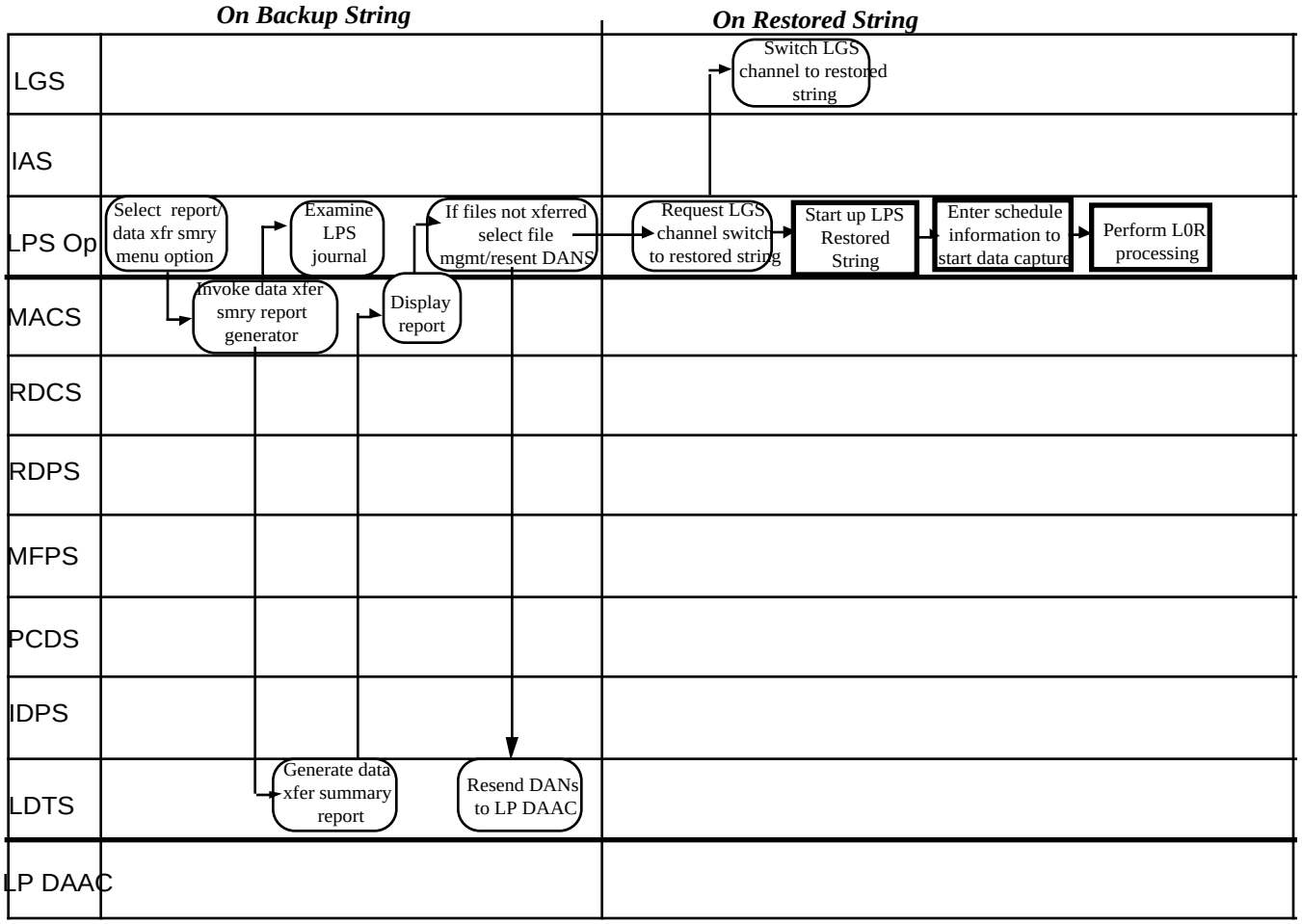

Restore LPS String